



# Oregon

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August 7, 2014

Dwight Leisle, PE  
Port of Portland  
7200 NE Airport Way  
Portland OR 97218

*via electronic delivery*

RE: DEQ Comments – Draft Feasibility Study  
Willamette Cove Upland Area  
ECSI #2066

Dear Mr. Leisle:

The Oregon Department of Environmental Quality (DEQ) has completed its review of the *draft Feasibility Study* document, dated February 12, 2014, prepared on your behalf by APEX. Our comments presented below are intentionally general as upland sampling and analysis work continues which will require Feasibility Study revision before remedy selection. After you have reviewed these comments, a meeting is recommended to discuss preparation of a revised Feasibility Study report for DEQ approval.

### General Comments:

1. Post-RRA Data Collection. A significant amount of new (post-Residual Risk Assessment) data have been generated at the site, in particular for dioxins/furans, that change the site “risk profile” for both ecological and human receptors. The revised Feasibility Study needs to include an introductory section or sections that present and discuss the significance of these new sampling results. With the recent distribution of Ecological and Human Health Preliminary Remediation Goals (PRGs) and hot spot values for upland areas, this introduction to the revised Feasibility Study should also include tables and/or figures showing the scope and magnitude of PRG and human health risk exceedances in the upland area, which will provide a frame of reference for establishing site Remedial Action Objectives (RAOs) and the assembly and evaluation of remedial alternatives.
2. SCE/Upland FS Nexus. In DEQ’s April 15, 2014 comment letter to the Port on the draft Source Control Evaluation (February 13, 2013), DEQ identified concerns regarding bankline contamination in a number of upland areas (above mean high water or MHW) that represent a source control concern. A response to DEQ Source Control Evaluation comments was provided in a June 13, 2014 letter to DEQ. The revised Feasibility Study needs to include all site areas above MHW where excess risk has been identified and/or contamination is present that is potentially mobile and might impact receptors below MHW (such as in-water receptors) where risk-based concentrations might be lower than for the

upland site. This SCE/upland FS nexus can be further discussed at the project meeting recommended in this letter.

3. Pending Removal Action and Site Risk. The Port is planning a soil removal action for areas upland of the Greenway easement, in fall 2014. This effort will focus on metals remediation and to a lesser extent dioxin hot spot remediation. We presume that the revised Feasibility Study will be submitted to DEQ prior to completion of this removal action work, and the revised Feasibility Study will therefore include areas identified for removal. The revised Feasibility Study should include a discussion of the proposed removal action, and how/whether this might impact final remedy selection for the upland site. Please indicate whether any thought has been given to completing a residual risk assessment after all interim and final actions are completed.

Thin Cap. It is unclear whether the cap thicknesses outlined in the Alternate Cap (Section 8.7- Six inches in non hot spot areas and twelve inches in residual hot spot areas), and recommended in Section 10.0, would be protective. Of particular concern would be the potential for both erosion and penetration of the cap by borrowing animals. A thin cap would not be protective of burrowing mammals at the site and may be marginally protective of surface dwelling receptors, depending on the dilution of surface concentrations that would actually occur. Additionally, soil invertebrates feed and may traverse a vertical distance greater than 6 inches, thus accumulating and exposing surface-dwelling receptors to deeper contaminants through their diet than may be estimated by surface concentrations alone. Ultimately, the protectiveness of this proposed remedy is dependent on the depth of the contamination profile. For example, if the contamination is present only in the first six inches of soil, treatment of this layer may have some merit. However, the presence of deeper contamination even with the use of a limited surface treatment, may not protect against exposure of wildlife to soils deeper than six inches (burrowing shrew) or accumulation in their food source (soil invertebrates, worms, plants, etc.). It would seem that in order to fully evaluate this proposal in the Feasibility Study, further characterization of the soil profile is needed.

The draft *Feasibility Study* acknowledges the burrowing animal concern, but indicates that mixing of contaminated and clean (cover) soil would reduce the concentrations being detected. Potential use of an “immobilization additive” such as activated carbon is suggested. More information is needed to support the protectiveness of a thin cap, including the levels of contamination that might be left in place in capped areas, and determination of how much dilution might occur.

DEQ further notes that no excavation or capping is proposed within the dripline of trees. At other sites with surface soil contamination beneath mature trees, hand removal of contaminated soil and backfilling with clean has been completed without damaging trees. Alternatively, water can be used to mobilize soil beneath mature trees (see document excerpt below from: Martin & Slagle, 2004).



### 3.3 Excavation in the Vicinity of Trees

Reasonable care will be taken to protect any live oak trees identified in the project area during site remediation. The roots of live oak trees will be washed prior to backfilling with clean soil. The root washing process has been used successfully during previous site remediations related to this project. The process involves the use of a pressure washer and vacuum truck. Soil is removed from around the roots of the tree using a low-pressure spray, which prevents damage to the outer protective layer of the root. Soil is suspended in water and the soil/water slurry is vacuumed into a holding tank. The slurry is allowed to separate; the water is decanted into a fractionation (frac) tank and the soil is loaded into a roll-off box. The soil will be disposed as previously described and water will be sampled. Water will be treated on-site to achieve a PCB concentration less than 0.5 ug/l and will be disposed at a permitted disposal facility.

If soil excavation beneath any trees exceeds 2 feet in depth, the trees may lack adequate support and may have to be removed.

4. Green Remediation/Sustainability of Remedial Action. The draft *Feasibility Study* notes that large-scale removal and off-site disposal of contaminated soil has a number of negative consequences, including the generation of greenhouse gases associated with soil transport, which bear consideration in evaluating remedial options. This is not only a implementation risk, but a general consideration in evaluating remedial options as outlined in DEQ's Green Remediation Policy found at: <http://www.deq.state.or.us/lq/pubs/docs/cu/GreenRemediationPolicy.pdf>). As noted in the policy, DEQ will "*Encourage the regulated community to evaluate and implement greener approaches to investigation and remediation.*" Please discuss in the revised Feasibility Study. We also recommend that you consider EPA Region 10's Green Remediation Guidance which can be found at [http://www.epa.gov/region10/pdf/cleanandgreen/ecl\\_policy\\_aug2009.pdf](http://www.epa.gov/region10/pdf/cleanandgreen/ecl_policy_aug2009.pdf)
5. Future Site Redevelopment/Restoration. At the most recent DEQ-Port meeting, it was indicated that plans are in development to reconfigure (lay back) portions of the site bankline as part of a larger site redevelopment/restoration work. This type of work would appear to have a bearing on both the remedy selected for upland areas and source control concerns, and therefore warrant merit further discussion in the revised Feasibility Study.
6. Consideration of Hybrid Disposal Approach. Utilizing new site data, please consider whether a hybrid disposal approach (a combination of on-site and off-site disposal) might be utilized to reduce the amount of off-site disposal.

### **Specific Comments:**

Section 2.8.3. The COC list should be expanded to include all contaminants included on the final PRG/Hot Spot table. Tables for both human and eco receptors should be included in the Feasibility Study.

Section 2.9. See General Comment #2 above. In selecting an upland site remedy, all upland areas (above MHW) representing a source control concern need to be addressed.

Section 3.0. See General Comment #1 above.

Section 4.0. Please modify the "Site Model" based on new site data (metals, PAHs and dioxins / furans), in particular discussing the high concentrations of dioxins that have been detected in the Central Parcel and widespread elevated mercury and lead.

Section 5.0. COCs should be modified as necessary based on final PRGs and hot spot values. These modified values should be substituted into Table 1 presented in the revised Feasibility Study. Modified PRG exceedance and Hot Spot figures should be presented including all new data collected since Dec. 2013, replacing those references in the section. Final PRGs and hot spot values may vary as project toxicologists are still coming to consensus on these issues.

Section 6.0. The remedial action area and extent will need to be modified based on a modified Table 1 (final PRG/ Hot Spot table). The size of hot spot area areas and removal action soil volumes are expected to increase significantly.

Section 7.2. Regarding the "cap" alternative, DEQ notes that there a number of potential options beyond simply covering contaminated soil with clean material. For example, given the large size of the site, consolidation of contaminated soil in selected site areas (and capping) should be considered. If deeper soil is free of contamination, consideration could also be given to excavation of deeper soil for use as cover, and burial of shallow contaminated soil. This assumes that leachability is not a concern. The need for demarcation to distinguish between clean cap material and underlying contaminated soil should be considered, in particular in relation to (effective) long-term monitoring.

Under Alternate Cap and Access Restriction, access restrictions seem to be limited to signage and deed restrictions on site uses. In the past, there has been discussion of physically restricting human access to portions of the site by permanent fencing or the like, with human activity in the upland limited to paths. Please discuss.

Section 8.2. Note that while DEQ's default soil cap is 2 feet of clean material, we have allowed a thinner cap (say 1' thick) based on site conditions. An important consideration for a thinner cap is monitoring and whether a demarcation "layer" is present. Also, see comment for Section 7.2 above.



Sections 6.0. Volume estimates appear to be based on the conclusion that actionable contamination is present to 3' bgs, which may be overly conservative as data on vertical definition is limited. Please discuss subsurface sampling data in Section 2 of the report to support the removal volumes outlined in Section 6. This issue has a strong bearing on both the volume of soil exceeding PRGs (and Hot Spot values), under consideration for remedial action, and the type of remedial action that might best address the contamination.

Section 9.0. Please revise the comparison of remedial alternatives considering post-RRA site data, changes to the site "risk profile" based on the new data, and the area and magnitude of PRG and Hot Spot exceedances.

Section 10.3.1. Text indicates that elevated dioxins in the Wharf Road exposure unit would be completely removed as a hot spot. Given that much higher concentrations of dioxins have now been detected in the upland, we assume that removal in this area will be re-evaluated as part of a site-wide analysis of hot spots. A large portion of the site contains hot spots, and removal in all areas may not be cost effective. DEQ recommends that hot spot treatment be evaluated using a hybrid approach that considers the magnitude of the exceedance (exceedance quotient approach), the different modes of action of the COCs, and the number of COCs at hot spot levels for a given location.

Cost Tables. DEQ will defer judgment on the cost estimates pending revision of the Feasibility Study to incorporate new site data.

Please contact me with questions and to schedule a meeting at 503 312-8216.

Sincerely,



Kenneth Thiessen, Hydrogeologist  
NWR Cleanup Section

Reference Cited

Martin & Slagle, 2004. Remediation Work Plan Mid South Leasing Property Crystal Springs, Mississippi. Martin & Slagle GeoEnvironmental Associates, LLC, for Borg Warner, Inc.

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